UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,823	12/16/2005	Jean-Christophe Fondeur	33155.29	5863

32300 7590 01/06/2009

BRIGGS AND MORGAN P.A.
2200 IDS CENTER
80 SOUTH 8TH ST
MINNEAPOLIS, MN 55402

EXAMINER	
THOMAS, MIA M	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
01/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,823	FONDEUR ET AL.	
	Examiner	Art Unit	
	Mia M. Thomas	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to applicant's remarks received on 20 October 2008. Claims 1-7 are canceled and Claims 8-14 are currently pending. A complete response to the applicant's remarks follows herewith.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

3. Claims 8-10 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory

category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101" – publicly available at USPTO.GOV, "memorandum to examining corp"). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In order for a process to be "tied" to another statutory category, the structure of another statutory category should be positively recited in a step or steps significant to the basic inventive concept, and NOT just in association with statements of intended use or purpose, insignificant pre or post solution activity, or implicitly.

The Examiner suggests amending the claims to read as follows, and although this is a mere suggestion by the Examiner, it is important that the applicant and/or the applicant's representative ensure that any and all amendments are indeed SUPPORTED by the original specification.

*** **Claim** 8. (Currently amended) A method **using a processor (or computer) to perform the steps** of determining [[the]] a living character of [[an]] a finger, of a user carrying a fingerprint and said finger being placed on a fingerprint sensor having an optical system, the method comprising the steps of:

(a) measuring an electrical quantity of the finger;

(b) taking of an image of the fingerprint carried by the finger by means of the optical system;

(c) measurement of a particular characteristic of the image;

(d) deducing from the particular characteristic thus measured, [[of]] a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable; and

(e) validation of validating the living character of the finger when the measured electrical quantity belongs to the deduced range.

Claim Suggestions

4. At Claim 10, the claim ends in the preposition "has" at line 3 of the claim. The Examiner suggests that the applicant and/or the applicant's representative amend the claim language to end in appropriate English grammar.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regards to claims 8-10, it is clear to the Examiner if steps (c) through (e) are in fact tied to a machine or computer to perform these mathematical calculations. The Examiner has rejected these claims because steps (c) through (e) of Claim 8 can be performed manually. It is an inherent requirement that step (a) is indeed performed by a machine and or computer, however by observation, steps (c) through step (e) can be performed manually by a user to determine a

living character of a finger of a user carrying a fingerprint using a fingerprint sensor. It is important that the applicant clarify how these multiple measurements and mathematical applications are performed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (US 6,888,956 B2) in combination Nysaether et al. (US 2005/0069178 A1), Dennis (EP 02252601.6) and Derakshani et al. "Determination of vitality form a non-invasive biomedical measurement for use in fingerprint scanners" Pattern Recognition, 36 21 December 2001, pages 383-396.

Regarding Claims 1 - 7 (canceled)

Regarding Claim 8: (currently amended) Muramatsu teaches a method of determining [[the]] a living character of [[an]] a finger, of a user carrying a fingerprint and said finger being placed on a fingerprint sensor having an optical system ("The present invention relates to an optical fingerprint authentication apparatus." at column 1, line 8; performs a judgment as to whether the pattern is living fingerprint (of a person) or a non-living fingerprint (replica)." at column 4, line 32); the method comprising the steps of:

(b) taking of an image of the fingerprint carried by the finger by means of the optical system; ("The present invention acquires an image of an object (finger) using an optical image

sensor having infrared sensitivity to sense light scattered or reflected from the object, and in doing so acquires an image (fingerprint pattern) of the object, determines the clarity thereof, and performs a judgment as to whether the pattern is living fingerprint (of a person) or a non-living fingerprint (replica)." at column 4, line 32);

Muramatsu does not specifically teach measuring an electrical quantity of the finger.

Nysaether teaches (a) measuring an electrical quantity of the finger; ("This is obtained by a sensor as stated above and which is characterized in that it comprises a number of conductive structures at or directly below the sensor surface, said conductive structures consisting of at least one stimulation or current sink electrode and a number of sensor elements coupled to interrogation electrodes in an electronic circuit for measuring impedance between the electrodes and said at least one stimulus electrode, the sensor device also comprising at least one additional electrode being positioned in the vicinity of said sensor elements and being coupled to a chosen voltage." at paragraph [0009]; "This invention relates to sensor device for performing measurements on an at least partially conductive surface, specially a sensor geometry to facilitate AC capacitive fingerprint measurements on wet and dry fingers." at paragraph [0001]). For clarity, the Examiner is stating that a capacitive fingerprint surface is an electrical quantity, and further this paragraph exemplifies the measurement is that of a wet or dry finger.

Muramatsu and Nysaether are combinable because they are both in the same field of biometric measuring.

At page 6 (see applicant's remarks), applicant also notes that Nysaether teaches a means for measuring an electrical quantity of the finger. However, Nysaether does not expressly teach (d)

deducing from the particular characteristic thus measured, [[of]] a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable.

Dennis teaches (c) measurement of a particular characteristic of the image ("For practical purposes it desirable to capture a larger number of images over a period of time determined by typical human heartbeats, so as to obtain sufficient data to verify the existence of a genuine human pulse waveform." at page 8, lines 18-22);

(d) deducing from the particular characteristic thus measured, [[of]] a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable (Refer to page 6, lines 12- page 7, line 12);

For clarity, Dennis teaches that the application of retrieving values of "live" or "real" and "fake" fingerprints is applied similarly with the characteristics of detecting a beating human heart that would only be present when certain biometric elements are present. As best understood by the Examiner, step (d) can more than reasonably anticipate the values that would be deduced from a particular characteristic measured to be compared between values of the image of the fingerprint (or beating heart) and the actual values measured by measuring an electrical quantity of the biometric element (finger or heart) as taught by Dennis.

Derakshani teaches (e) validation of ~~validating~~ the living character of the finger when the measured electrical quantity belongs to the deduced range (Refer to Step 13, at page 386, right column, further at page 393, Section 6-"Results", paragraph 2, left column and Figure 14.)

Muramatsu, Nysaether, Dennis and Derakshani are combinable because they are in the same field of sensory measurement for personal identification, specifically, fingerprint authentication. At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as taught by Muramatsu, Nysaether, Dennis and Derakshani. All of the claimed elements were known in the prior art at the time of the invention and the skilled artisan could have combined the elements by known methods with no change in their respective functions, and the combination of the teachings of Muramatsu, Nysaether, Dennis and Derakshani would have yielded predictable results to the skilled artisan at the time of the invention. The teachings of Muramatsu, Nysaether, Dennis and Derakshani would have been combinable to teach the manual and automatic elements measured to determine a living character of a finger of a user carrying a fingerprint on a fingerprint sensor.

Specifically, "However, since the underlying mechanisms for static and dynamic measures are different, a combination of all these measures provides better precision than any of the individual measures." (at Section 6, "Results", Derakshani)

Further, Dennis teaches "The optical biometric sensor apparatus and methods for analyz(es) images of biometric features such as fingerprints are adapted to distinguish between live body members and inanimate objects, and to detect spoofing devices applied to live body members." (at abstract, Dennis).

Therefore, it would have been obvious to the skilled artisan to combine the teachings/disclosure of Muramatsu, Nysaether, Dennis and Derakshani to more than reasonably obtain the specified claimed elements of Claim 8.

Regarding Claim 9: (previously presented) Nysaether teaches the particular characteristic is selected from the group consisting of: the contrast of the image, the average grayscale of the image, the width of the images of the ridges formed by the said fingerprints, and the average grayscale of the ridges (Refer to paragraphs [0003, 0032, 0033, and 0035]). Specifically, at paragraph [0033], Nysaether teaches "For wet fingers (valleys filled with saline) this will result in an image where the well-conducting saline-filled valleys appear as nearly white and the somewhat less conductive ridges areas appear as light grey. By increasing the analogue amplification of these signals the contrast of this image will be increased. With this technique we may thus obtain a "right reading" (twice inverted) image also for wet fingers (ridges black, valleys light)."

Regarding Claim 10: (Currently Amended) Nysaether teaches the electrical quantity is <u>an</u> [[the]] impedance which value is measured at the terminals of electrodes that the sensor has. ("One problem for capacitive fingerprint sensors is that the finger conductivity (both resistive and AC capacitive) vary strongly with the humidity of the finger. For dry fingers, the result may be that the outer part of the skin (stratum corneum) has higher impedance (lower capacitance) than the sensor dielectric, so tat the combined series capacitance is dominated by the finger impedance. This ridge may then seem more like a valley than like a ridge." at paragraph [0005]).

Regarding Claim 11 (As best understood by the Examiner): Currently Amended-Claim 11 has claimed elements that equally resemble claim 8. Claim 11 is the apparatus (device) that effectively utilizes the method steps of Claim 8. Specifically, Muramatsu teaches "A fingerprint authentication apparatus" (see title and abstract of the invention) as does Nysaether ("Sensor device for performing measurements on an at least partially conductive surface (see title and abstract of the invention)). The combination of the teachings of Muramatsu, Nysaether, Dennis and Derakshani more than adequately teach the claimed elements as equally reflected in the claim language of Claims 8 and 11. Therefore, claim 11 stands rejected for the same reasons as stated above at claim 8.

Regarding Claim 12 (previously presented)**:** (previously presented) Nysaether teaches the particular characteristic is selected from the group consisting of: the contrast of the image, the average grayscale of the image, the width of the images of the ridges formed by the said fingerprints, and the average grayscale of the ridges (Refer to paragraphs [0003, 0032, 0033, and 0035]). Specifically, at paragraph [0033], Nysaether teaches "For wet fingers (valleys filled with saline) this will result in an image where the well-conducting saline-filled valleys appear as nearly white and the somewhat less conductive ridges areas appear as light grey. By increasing the analogue amplification of these signals the contrast of this image will be increased. With this technique we may thus obtain a "right reading" (twice inverted) image also for wet fingers (ridges black, valleys light)."

Regarding Claim 13 (previously presented)**:** Nysaether teaches wherein the means of measuring an electrical quantity is a means of measuring impedance at the terminals of electrodes. ("This is obtained by a sensor as stated above and which is characterized in that it comprises a

number of conductive structures at or directly below the sensor surface, said conductive structures consisting of at least one stimulation or current sink electrode and a number of sensor elements coupled to interrogation electrodes in an electronic circuit for measuring impedance between the electrodes and said at least one stimulus electrode, the sensor device also comprising at least one additional electrode being positioned in the vicinity of said sensor elements and being coupled to a chosen voltage." at paragraph [0009]).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (US 6,888,956 B2) in combination Nysaether et al. (US 2005/0069178 A1), Dennis (EP 02252601.6) and Derakshani et al. "Determination of vitality form a non-invasive biomedical measurement for use in fingerprint scanners" Pattern Recognition, 36 21 December 2001, pages 383-396.and further in view of Lee (US 6,952,490 B2).

Regarding Claim 14:

Muramatsu, Nysaether, Dennis and Derakshani in combination teach all the claimed elements as rejected above.

Muramatsu, Nysaether, Dennis and Derakshani in combination does not specifically teach electrodes formed on a transparent plate, the connections to the electrodes being conductive and also transparent.

Lee teaches electrodes are formed on a transparent plate, the connections to the electrodes being conductive and also transparent (Refer to Figure 1 or Figure 2, numeral 2; "...there is provided a method for fabricating a fingerprint recognizing device comprising the steps of:

forming a transparent insulating layer using a transparent insulating material; forming a transparent electrode layer on the transparent insulating layer using a transparent conductive material…" at column 2, line 12).

Muramatsu, Nysaether, Dennis and Derakshani and Lee are combinable because they are in the same field of sensory measurement for personal identification, specifically, fingerprint authentication.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to formulate electrodes on a transparent plate, and the connections to the electrodes being conductive and also transparent.

All the claimed elements were known in the prior art at the time and the skilled artisan could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Specifically, "However, since the underlying mechanisms for static and dynamic measures are different, a combination of all these measures provides better precision than any of the individual measures." (at Section 6, "Results", Derakshani).

The suggestion/motivation for this combination of the teaching of Lee would be that in a general fingerprint recognizing device according to the conventional art, a fingerprint image is outputted as a gray image in a state where the ridge lines of the fingerprint are directly contacted with the surface of the light emitting layer. As the fingerprint image is outputted as the gray image, the fingerprint image is not clear in processing the fingerprint image using the optical fingerprint

image generated from the fingerprint recognizing device, thus making the processing of the image difficult. It is, therefore, advantageous to create a fingerprint recognizing device having patterned floating electrodes and a fabricating method therefor, in the fingerprint recognizing device having a transparent insulation layer, a transparent electrode layer and a light emitting layer, by forming patterned floating electrodes on a surface of the light emitting layer, a fingerprint image generated to the fingerprint recognizing device is outputted as states of turning on/off. Refer to column 1, line 49, Lee.

Further, this combination would be able to more efficiently produce "a fingerprint recognizing device having patterned floating electrodes and a fabricating method therefor which are capable of more clearly generating a fingerprint image generated from the fingerprint recognizing device used for identifying a person." at column 1, line 12, Lee.

Therefore, it would have been obvious to combine all the claimed elements of Muramatsu, Nysaether, Dennis and Derakshani and Lee as taught above to obtain the specific elements of claim 14.

Response to Arguments

10. Applicant's arguments, see page 4 with respect to "Non-Prior Art Matters (A)" have been fully considered and are persuasive. The objection of Claim 8 has been withdrawn.

11. Applicant's arguments, see page 4, with respect to "Non-Prior Art Matters (A)", specifically, insufficient antecedent basis, 35 USC 112, second paragraph, have been fully considered and are persuasive. The rejection of Claims 8-14 has been withdrawn. However, the Examiner has forwarded another 35 USC 112, second paragraph, rejection. See above.

12. Applicant's arguments with respect to claims 8-14, at pages 4-10, specifically, elements A-D, have been considered but are moot in view of the new ground(s) of rejection. The newly forwarded 112, second paragraph rejection has been interpreted in view of the new combination of the teachings of Muramatsu, Nysaether, Dennis and Derakshani. See the rejection above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is (571)270-1583. The examiner can normally be reached on Monday-Thursday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mia M Thomas/
Examiner, Art Unit 2624

/Vikkram Bali/

Supervisory Patent Examiner, Art Unit 2624